ENGINEERING STANDARD

326 - CLEARING AND SNAGGING (FT)

Definition

Removing snags, drifts, or other obstructions from a channel.

Scope

This standard applies to the clearing of trees and brush and the removal of sediment bars, drifts, logs, snags, boulders, piling, piers, headwalls, debris, and other obstructions from the flow area of a natural or excavated channel. It also applies to selective snagging, which is the selective removal of obstructions from the channel and streambanks to increase its capacity to carry water.

Purpose

To increase the flow capacity of a channel by improving its flow characteristics; to prevent bank erosion by eddies; to reduce the forming of bars; and to minimize the occurrence of ice jams.

Special attention shall be given to maintaining or improving landscape resources and habitat for fish and wildlife, where applicable.

Conditions Where Practice Applies

Any channel or floodway where the removal of trees, brush, and other obstructions is needed to accomplish one or more of the listed purposes. If clearing and snagging are likely to result in channel erosion, impairment to the landscape resource quality or impairment to habitat for fish and wildlife, either the clearing and snagging shall not be done or practices to minimize such damage shall be applied concurrently with the clearing and snagging.

Planned Considerations for Water Quantity and Quality

The clearing of trees and brush and the removal of sediment bars, trees, stumps, and debris from streams will increase velocity, and channel flow capacity which will reduce flood damage to adjacent property from out of bank flow. Improved channel flow conditions will lower the hydraulic gradient and more quickly drain floodplains. This more rapid drawdown may cause sloughing of saturated unstable channel soils. Ground water recharge may be decreased in streams because of the reduced time water is in the stream and adjacent floodplains. There may also be a loss of aquatic or wetland habitat.
Rapid drawdown and channel instability can increase sediment yield from bank erosion until revegetated and may result in turbidity downstream as well as a sedimentation problem in the channel or on the floodplain. During construction, a heavy organic and silt load may be produced. There may be an increase in low flow surface water temperature due to the removal

of shade producing canopy. A reduction in groundwater recharge may contribute to improved aquifer quality. Water pools and riffles formed in the channel bottom may adversely affect fish and aquatic habitat. A careful evaluation should be made of the water quantity and quality effect before clearing and snagging is planned, design, and installed.

Design Criteria

The capacity of the channel, both before and after improvement, shall be determined by use of Manning's Formula using applicable values of the retardance factor "n" for both conditions. The value of "n" used to determine channel capacity after improvement shall reflect the degree of operation and maintenance expected in future years.

The area to be cleared and snagged shall include the perimeter of the channel, the flow area of the floodway, or both. Adjacent trees or other objects that may fall into the channel shall also be included. Clearing and snagging may be specified for other areas, including berms, for use as temporary disposal areas or travel ways, or for planned conservation uses. The effects of removing obstructions on downstream reaches shall be considered.

Channel stability shall not be impaired by clearing and snagging. The criteria for determining channel stability in FOTG Standard 582 - Open Channels shall be compiled with. The effect of removing obstructions on downstream reaches shall be considered.

Operation and Maintenance

An operation and maintenance plan will be developed and provided to the landuser. The plan will include minimum operation and maintenance requirements for the designed sections. This will include consideration for fish and wildlife habitat, quality of the landscape, water quality, methods of maintenance, repair and the time of year for accomplishing the work.

Plans and Specifications

Plans and specifications for installation of access roads shall be in keeping with this standard and shall describe the requirements for construction of the practice to achieve its intended purpose.

References

National Engineering Field Manual for Conservation Practices
National Engineering Handbook, Section 16

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
_____, ALABAMA

OPERATION AND MAINTENANCE PLAN
CLEARING AND GRUBBING

OPERATOR _____ DATE _____

ADDRESS _____

LEGAL DESCRIPTION OF PRACTICE LOCATION _____ SEC _____ T _____ R _____

A properly operated and maintained clearing and snagging channel operation is an asset to your farm. the clearing and snagging, debris and sediment removal was designed and installed to improve channel flow characteristics. The estimated life span of this installation is at least 20 years. The life of this installation can be assured and usually increased by developing and carrying out a good operation and maintenance program.

This practice will require you to perform periodic maintenance and may also require operational items to maintain satisfactory performance. Here are some recommendations to help you develop a good operation and maintenance program.

GENERAL RECOMMENDATIONS

Check all improved sections for accelerated weathering and displacement. Replace to original grades if necessary.

Maintain vigorous growth of desirable vegetative coverings. This includes reseeding, fertilization, and controlled application of herbicides when necessary. Periodic mowing may also be needed to control height.

All settlement or cracks in the soil should be investigated to determine the cause and immediately repaired.

If fences are installed, they shall be maintained to prevent unauthorized human or cattle entry.

Remove unplanned woody vegetation, stumps, logs, and debris that may accumulate at this section, and immediately upstream or downstream from this installation.

Control livestock access or unfenced areas.

Eradicate or otherwise remove all rodents or burrowing animals. Immediately repair any damage caused by their activity.

Immediately repair any vandalism, vehicular, or livestock damage.

SPECIFIC RECOMMENDATIONS FOR YOUR INSTALLATION

CONTACT YOUR LOCAL SOIL CONSERVATION SERVICE OFFICE FOR ANY ADDITIONAL TECHNICAL ASSISTANCE YOU MIGHT NEED FOR IMPLEMENTATION OF THIS OPERATION AND MAINTENANCE PLAN FOR YOUR STRUCTURE.

CONSTRUCTION SPECIFICATIONS

FOR

CLEARING AND SNAGGING

Scope

This item shall include the removal of snags, drifts, and downed timber, excavation of sediment bars, and disposal of all materials from specified areas of the stream channel and berms. Construction shall be carried out in such a manner that erosion and water, air, and noise pollution will be minimized and held within legal limits as established by local, state, or federal regulations.

Clearing and Grubbing

All trees, stumps, and, brush, within the perimeter of the channel shall be cut as close to the ground as the cutting tools permit. If other areas are to be cleared, the trees, brush, and other woody vegetation shall be cut within the maximum distance above the ground level specified.

Trees shall be felled in such a manner as to avoid damage to other trees, property, and objects outside the limits of clearing.

Down trees, logs, drifts, boulders, debris, and other obstructions lying wholly or partly in the channel shall be removed. Piling, piers, headwalls, and sediment bars that obstruct the free flow of water shall be removed if so designated in the project plans and specifications.

If herbicide treatment is planned, the stumps and brush in the specified area shall be treated at the time of clearing according to the recommendations of the manufacturer of the herbicide specified or being used.

The use of explosives in all clearing and snagging operations shall be in strict compliance with the applicable state statutes and regulations.

If channels are located in cultivated areas or in areas of high value land, trees, logs, and all combustible material resulting from the clearing and snagging operations shall be burned, buried, or piled in designated disposal areas as specified for the project. All burning shall be performed outside the channel and shall conform to regulations in effect in the area. Residue from burning and noncombustible material shall be buried outside the channel or placed in designated disposal areas. All buried material shall have a minimum adequate earth cover of 2 feet to permit proper land use.

Measures and construction methods that enhance landscape resource quality and fish and wildlife values shall be incorporated as needed and practical. Special attention shall be given to visual resources protecting and maintaining key shade, food, and den trees and to stabilization of disturbed areas.

Selected snagging where possible shall be performed primarily with hand operated equipment, water based equipment, or small equipment used in a manner that will minimize soil water and other resource disturbances.

Excavation

Excavation shall be made to the lines and grades shown on the plan or as directed by the technician. All finished earth sections shall be smooth and of good appearance.

Berm Width

The minimum berm width will meet standard specifications or will be as shown on the plans.

Spoil

All spoil material shall be placed, shaped, or spread as indicated by the plans or as staked in the field to meet local conditions.

Protective Structures

Planned grade control structures will be installed at locations as shown on the plans or as staked in the field.

Vegetation

Vegetative treatment shall be established as specified or as shown on the plans. Vegetation will be established on the ditch side slopes, berm area, and spoil areas and shall be applied as channel vegetation FOTG Standard 322.